GLENN L. MARTIN AIRCRAFT COMPANY PLANT NO. 2
(Middle River GSA Depot)
2800 Eastern Boulevard
Middle River
Baltimore County
Maryland

HAER MD-136
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

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Location:	2800 Eastern Boulevard, Middle River, Baltimore County, Maryland
Date of Construction:	1941
Architect/Engineer:	Albert Kahn and Associates
Present Owner:	General Services Administration
Present Use:	Warehouse
Significance:	Plant No. 2 was built in 1941 and designed by pioneering architectural and engineering firm Albert Kahn and Associates of Detroit. It was an expansion of the Glenn L. Martin Aircraft Company facilities in Middle River. While Plant No. 1 is the earliest example of Kahn's pioneering industrial design for large-scale aircraft construction at Middle River, Plant No. 2 follows the same formula and is remarkably intact. Army B-26 bombers were manufactured at Plant No. 2 and easily transported to Baltimore on the adjacent railroad line as part of the industrial mobilization for World War II.
Historian:	Lisa Pfueller Davidson, 2006
Project Information:	This short history was prepared to supplement photographic documentation of World War II-era resources in Middle River. During 2004-05 HABS staff photographer James Rosenthal photographed a series of sites in Baltimore City and County in preparation for the *Buildings of Maryland* publication. Maryland Historical Trust sponsored the photography project and is producing *Buildings of Maryland* as part of the Society of Architectural Historians' *Buildings of the United States* series with the University of Virginia Press.

Historical Context:

Plant No. 2 was designed by Detroit architect and engineer Albert Kahn, the preeminent industrial designer in the United States during the first half of the twentieth century. Albert Kahn and Associates especially was known for Henry Ford's River Rouge and Highland Park automobile plants. The original section of Martin's Middle River aircraft Plant No. 1 was built in 1928. Kahn's designs for the expansion of this plant in anticipation of World War II were landmarks in modern engineering. The 1937 Assembly Building featured an unobstructed space 300 feet by 450 feet. Kahn used bridge span technology to accomplish this feat, and designed the lightest structure possible at the time.[1] *Engineering-News Record* remarked on the structural innovations Albert Kahn brought to the airplane factory:

> Airplane manufacturing requirements, which tend toward larger and larger unobstructed floor areas, are forcing the development of a new type of industrial building. . . . From an engineering standpoint, the assembly building is notable for 303 foot span parallel-chord roof trusses that makes it large unobstructed floor area possible, for an extensive underfloor installation of utility lines and hot air heating ducts and for a new type door that provides an opening 300 feet wide and 40 feet high.[2]

In 1939, Kahn and Associates designed an additional manufacturing unit for this plant. Between 1939 and 1943, the number of employees at the Glenn L. Martin Company airplane manufacturing facilities in Middle River, Maryland mushroomed from 3,000 to 52,000.[3]

In 1941, Plant No. 2 was constructed on Eastern Avenue a mile and a quarter east/northeast of the original facility. Construction for Plant No. 2 was well underway by the middle of May 1941 and the factory was dedicated in November of that year. The new plant also was designed by Kahn, using many features of his work on the other Martin plant. Another identical plant also designed by Kahn for Martin was located in Omaha, Nebraska. Plant No. 2 was built to produce Army B-26 Marauder bombers. It was the first factory expansion funded by the Federal government under the Emergency Plant Facilities Act. Under this arrangement the factory was leased to the Martin Company by the Army Air Corps.[4]

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[1] Grant Hildebrand, *Designing for Industry: The Architecture of Albert Kahn* (Cambridge, MA: MIT Press, 1974), 183-84.
[2] "Getting Ready for Bigger Airplanes," *Engineering News-Record* 119 (9 December 1937): 941.
[3] Jack Breihan, "Necessary Visions: Community Planning in Wartime," *Maryland Humanities* 71 (November 1998): 11.
[4] Paul E. Tignor, "Problems in Aircraft Plant Expansion," *Civil Engineering* 11, no. 7 (July 1941): 391; "Building for Defense. . . A Million Square Feet of Floor," *Architectural Forum* 75 (November 1941): 335, 336; See also Maryland Historical Trust Historic Sites Survey BA-2824.

The resulting factory buildings were remarkable examples of Modern industrial buildings, particularly for the Mid-Atlantic region. According to the "Modern Movement in Maryland" context study prepared by University of Maryland, College Park faculty and graduate students:

> One cannot find in pre-World War II America many more compelling examples of a fusion between modernity, modernism, and modernization than in the Martin factory. All three of Kahn's designs, the buildings of 1937, 1939, and 1941, are unusual examples of Modernism in Maryland for the boldness and purity of their expression of the logical physical structure for plants that produced flying machines during a time of emergency with unprecedented speed and scale.[5]

Until recently Plant No. 2 was owned by the General Services Administration and used as a warehouse by a number of government agencies. The 50 acre site, including the 1.9 million square foot historic factory complex, was sold to an undisclosed bidder at an online auction for $37.5 million in September 2006.[6] The status of the buildings, which are on the Maryland Register of Historic Places and determined eligible for the National Register of Historic Places, in future redevelopment of the site is uncertain.

Description:

Plant No. 2 is a large one-story and basement industrial complex with a number of adjoining buildings corresponding to different aspects of the B-26 airplane production process.[7] The total square footage is 1,181,000. The main factory building – including basement and first floor assembly area – is 602 by 900 feet. It is surrounded by a 50 by 100 foot boiler house, 100 by 100 foot oil house, and 100 by 250 foot drop hammer building. A 50 by 100 foot tan brick administration building sits near the front gate. It is a flat roof structure with two stories and a basement. This otherwise plain building features glass block-filled openings, curved corners, and aluminum awnings at the entrances indicative of streamlined Modernism from the period. Also nearby but no longer part of the same complex is the former paint shop (west of high bay assembly area).

It was unusual for airplane factories to have basements, but in this instance Kahn took advantage of the natural grade of the site to create a "basement" level that was open on three sides. The manufacturing processes – creating parts and doing sub-assembly - were located in these spaces, which have 10 foot concrete mushroom columns spaced 50 by 100 feet. The assembly areas on the first floor have steel columns spaced 50 by 100 feet with a truss clearance of 22 feet. The final assembly bay ("high bay") at the west

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[5] Isabelle Gournay et. al. "Modern Movement in Maryland – Context Essay," Draft (December 2002), 28.
[6] GSA News Release, 22 September 2006, http://www.gsa.gov.
[7] See "Building for Defense. . . A Million Square Feet of Floor," 336-337 for a detailed description of Plant No. 2, including square footage and industrial process information which appears in the following paragraphs.

end of the plant has steel columns spaced 100 by 200 feet with a height of 28 feet. Like Plant No. 1, Kahn used parallel-chord bridge trusses to span these large assembly areas. These trusses also support two ton overhead cranes. The massive telescoping cantilevered doors are located in this west wall and allowed the assembled B-26 to be moved to the adjacent Pennsylvania Railroad tracks for delivery.

The walls are reinforced concrete from the footings to the first window sill eight feet above the main floor. Above here the walls were originally cement stucco sprayed on metal panels. Maximum natural lighting was provided by bands of industrial metal sash windows in the walls and double-sided glazed roof monitors. The hardware is still in place to hang wartime blackout coverings over the windows. The original roof was comprised of metal decking with one inch of cork insulation covered by composition roofing material. The heating vents for the first floor of the factory are located in the base of the metal columns. The concrete floor slabs were originally covered with two inch wood block flooring. All of the historic machinery has been removed but the complex retains a high level of historic integrity, with painted windows and lighting upgrades being the only major changes to the historic fabric.

Sources:

Breihan, Jack "Necessary Visions: Community Planning in Wartime," *Maryland Humanities* 71 (November 1998): 11-14.

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"Getting Ready for Bigger Airplanes," *Engineering News-Record* 119 (9 December 1937): 941-946.

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